ABSTRACT OF THE DISCLOSURE

In a communication network, end-user systems are connected via a common transmission medium to a timeslot assignment unit. Each end-user system has a buffer for storing packets, and a queue length detector for detecting a queue length of the stored packets. The end-user system forwards packets on assigned timeslots to the network and transmits a signal for indicating the detected queue length to the assignment unit. The timeslot assignment unit maintains timeslot records to store count numbers of assigned timeslots, determines a total count number of timeslots assigned to each end-user system during a period corresponding to the delay time of the unit, and receives a queue length signal from each end-user system. From the total count number and the queue length a virtual queue length is determined for indicating the number of packets to which timeslots are still not assigned. Based on the virtual queue length, timeslots are assigned to each end-user system.